

NAVAL WAR COLLEGE
Newport, R.I.

Mine Warfare Component Coordination in Support of Operational
Maneuver From The Sea

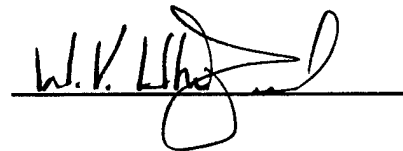
by

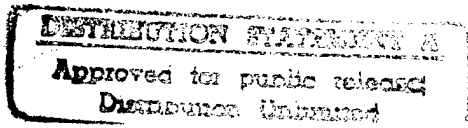
Walter V. Whitfield
LTCOL, U.S. Marines Corps

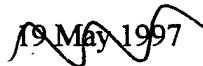
A paper submitted to faculty of the Naval War college in partial satisfaction of the requirements of the Department of Joint Military Operations.

The contents of this paper reflect my own personal views and are not necessarily endorsed by the Naval War College or the Department of the Navy.

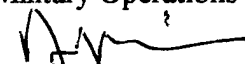
Signature:





 19 May 1997

Paper directed by
George W. Jackson, Captain, USN
Chairman, Department of Joint Military Operations



Captain D.J. Grieve, USN, Ret Date
Joint Military Operations Department
Faculty Advisor

19970815 065

100% QUALITY INSPECTED 1

REPORT DOCUMENTATION PAGE

1. Report Security Classification: UNCLASSIFIED			
2. Security Classification Authority:			
3. Declassification/Downgrading Schedule:			
4. Distribution/Availability of Report: DISTRIBUTION STATEMENT A: APPROVED FOR PUBLIC RELEASE; DISTRIBUTION IS UNLIMITED.			
5. Name of Performing Organization: JOINT MILITARY OPERATIONS DEPARTMENT			
6. Office Symbol: C		7. Address: NAVAL WAR COLLEGE 686 CUSHING ROAD NEWPORT, RI 02841-1207	
8. Title (Include Security Classification): MINE WARFARE COMPONENT COORDINATION IN SUPPORT OF OPERATIONAL MANEUVER FROM THE SEA (U)			
9. Personal Authors: LTCOL WALTER V. WHITFIELD, USMC			
10. Type of Report: FINAL		11. Date of Report: 13 JUNE 1997	
12. Page Count: 21			
13. Supplementary Notation: A paper submitted to the Faculty of the NWC in partial satisfaction of the requirements of the JMO Department. The contents of this paper reflect my own personal views and are not necessarily endorsed by the NWC or the Department of the Navy.			
14. Ten key words that relate to your paper: MINE WARFARE COMPONENT COMMANDER, DEFICIENCIES; JOINT DOCTRINE; COMBINED TRAINING			
15. Abstract: This paper analyzes the need for centralized control of all mine warfare functions at the operational level. "Mine Warfare has become one the the essential keys to unlocking the littoral battlespace. As such, we intend on putting in the hand of the Sailors and Marines who sail in support of our nation's bidding, the capabilities to defeat the mine threat, accomplish the mission, and return home safely."			
16. Distribution / Availability of Abstract:	Unclassified X	Same As Rpt	DTIC Users
17. Abstract Security Classification: UNCLASSIFIED			
18. Name of Responsible Individual: CHAIRMAN, JOINT MILITARY OPERATIONS DEPARTMENT			
19. Telephone: 841-6461		20. Office Symbol: C	

Abstract

This paper analyzes the need for centralized control of all mine warfare functions at the operational level. "Mine warfare has become one of the essential keys to unlocking the littoral battlespace. As such, we intend on putting in the hand of the Sailors and Marines who sail in support of our nation's bidding, the capabilities to defeat the mine threat, accomplish the mission, and return home safely."¹ Examples of limitations on Naval Operations cases are cited. I contend that the failures were in part due to bracket and often ambiguous forms of command and control. Furthermore, I contend these failures are a direct result of inadequate doctrine and lack of combined and joint training. This paper draws on concepts and discussions about mine warfare from the Korean War to Desert Storm.

My conclusion is a single point of contact at the CINC level, and better doctrine and training that would provide a more capable Mine Warfare force—one that would fully enable the CINC to exercise his responsibility.

TABLE OF CONTENTS

CHAPTER	PAGE
I ABSTRACT	p.ii
II BACKGROUND	p. 1
III INTRODUCTION	p. 4
IV MINE WARFARE COMPONENT COMMANDER.....	p. 5
V DEFICIENCIES IN JOINT DOCTRINE	p. 9
VI DEFICIENCIES IN JOINT AND COMBINED TRAINING	p.11
VII CONCLUSION.....	p.14
VII ENDNOTES	p.16
VIII BIBLIOGRAPHY	p.18

Mine Warfare Component Coordination in Support of Operational Maneuver From The Sea

Background

Mines and obstacles are considered the best force multipliers and the least expensive defensive systems readily available to any third world nation. Mines can be employed under a variety of strategic, operational, or tactical scenarios. Strategically, mining can deny free access to vital sea areas—thus, limiting the maneuverability of forces. Operationally, mines can be employed to create a formidable barrier to amphibious forces. Tactically, mines can be employed to restrict time and space.

“Although the Iraqi minefields were not placed to maximize their effectiveness and many mines were deployed improperly, mine warfare had a considerable effect on coalition maritime operations in the Persian Gulf.”² With many potential adversaries who have embraced mine warfare as a cornerstone of their coastal defense concept, each CINC must plan and employ mine countermeasures at the operational level or adjust operations to account for them. Lost opportunity may be a greater cost. Currently, there are 49 countries possessing mining capabilities; of these, at least 30 have demonstrated a mine production capability and twenty have attempted to exploit these systems.³

Furthermore, in this changing world order and to support our stated National Security Strategy Policy, we must maintain a credible mine warfare capability. This is critical to our ability to satisfy the President’s policy:

1. Deter and defeat aggression in major regional conflicts.
2. Provide a credible overseas presence.
3. Counter weapons of mass destruction.

4. Contribute to multilateral peace operations.
5. Support counterterrorism efforts of fighting drug traffickers.⁴

The President's stated strategic objectives imply the possibility that U.S. forces will be committed to third world countries or regions in the foreseeable future; however, as a result of political constraints and reduction of U.S. bases and basing rights, airfields or port facilities may not be available. It is likely that one or more countries in the region will be our adversary. If this assumption is correct, an amphibious force will likely be a desired operational response to a crisis. The obvious question is: "What does this have to do with Mine Warfare in support of Operational Maneuver From The Sea (OMFTS)?" The simple answer is this "What" has several parts.

First, sea routes and coastline dominate our access to third world regions. One needs only to look at Korea to understand the major role mining of the coastline had on the Korean War. "The enemy in these waters was kind enough to permit us to go to kindergarten insofar as mines encountered were concerned. Basically, three types were used: the Russian MKB which had its prototype in a 1908 model; the M26 which had its prototype in a 1912 model, and lastly, a ground magnetic influence type which we designated as the RIA."⁵

In addition, many of the third world countries at the end of these sea routes provide vital resources to the United States. For example, the United States has considered the Caribbean Basin strategically vital for some time. This area is important for its oil and as a communication nexus. Because this area is considered to be vital, the United States has intervened militarily in this region on a frequent basis. Operation Just Cause is a recent example.

Another example is the Indian Ocean. This area includes the entire coast of Africa, the entire coastline of India, a large portion of Australia's coastline, and the critical Straits of Malacca (Singapore). Many of the world's shipping routes are in this region of the world. "Our ability to command the seas in areas where we anticipate future operations allows us to resize our naval forces and to concentrate more on capabilities required in complex operating environments of the 'littoral' or coastline of the earth."⁶ However, to accomplish the mission outlined by the late Admiral Jeremy M. Boorda, Chief of Naval Operations, many operational commanders have assumed the policy of avoidance, both obstacles and mines. But, avoidance is predicated on the ability of the landing force to determine the presence and characteristics of mine/obstacle barriers through accurate and timely reconnaissance. The United States' current ability to clear/breach barriers in stride with the ship-to-shore movement, coupled with the lack of accurate, timely reconnaissance capability, precludes the use of modern, amphibious maneuver warfare tactics.

Furthermore, notable problems that affect the CINC's options and actually limit his courses of action, include limited or deficient capabilities for mines and obstacles clearance in shallow water (200-40 feet), very shallow water (40-10 feet), surf zone (10-0 feet), and the craft landing zone. Ambiguous areas of responsibility, deficient doctrine, and lack of joint and combined training further compounded these problems.

During the Gulf War, mine countermeasure (MCM) deficiencies were identified as a major weakness of the U.S. military capability. Fortunately, an amphibious landing was not required. I plan to show how best to attack these problems in support of the CINC's Military Strategy by establishing a Mine Warfare Component Commander, improving joint doctrine, and improving joint training.

Introduction

*"A war in which enemies seldom meet and battle is rarely joined, but death and destruction always mark the field. Where the big ships fight their battles, and the little mine craft have already been to do their dull and dirty duty, in which there is glory. Where the fighting fleets sail to victory, there are the seas of glory. But where the little ships go, there is the most dangerous sea. This is mine warfare."*⁷

United States military operations have evolved from containment to a policy in support of national interests to counter existing, emerging, and reemerging threats in a highly dynamic world. The Department of Defense's (DoD) focus is toward countering aggression by regional powers through the rapid projection of decisive military power. DoD's shift in focus from global to regional conflicts and from open oceans to littoral areas has been accompanied by a reorientation of views on what military capabilities will be required and how those capabilities will be effectively and efficiently employed to meet future national interests.

"Moreover, through its history to the modern day, the mine has proved to be a most cost-effective weapon that causes physical damage, creating psychological uncertainty, and requires a countermeasures effort far out of proportion to the cost of the mining efforts. As far as a multiplier, mines serve as 24 hour-a-day sentries that continuously threaten enemy ships without the requirement of logistical or maintenance support."⁸

Without understanding the mine threat, one cannot appreciate the importance of mine warfare, its impact on amphibious operations. If operational art is the employment of joint military forces to achieve goals in a theater of war through the design and conduct of an operation, then mine warfare is an enabler achieving these goals. We must ensure that a timely and effective response to potential mine threats is taken.

A common understanding exists that joint and combined operations require the operational commander to utilize his sources (to include people) as best suited, for mission accomplishment.

Too often mine warfare has been vocalized with great zeal and emotions, but often forgotten once the war ends. Without understanding the importance of this commodity, one cannot appreciate the importance of Operational Maneuver From The Sea.

Mine Warfare Component Commander

*"'Fleet-wide mine consciousness' is the sea change needed to ensure the success of Navy Marine Corps Expeditionary Warfare in the littorals. Unless countered or neutralized, mines will enable our adversaries to attack our strategy directly and impede or deter maritime operations ... 'I am committed, therefore, to ensuring that Mine Warfare is placed and remains in the forefront and 'mainstream of the Naval Services' contribution to joint and combined warfighting capabilities.'"*⁹

*Admiral Jeremy M. Boorda
Chief of Naval Operations*

Today's Mine Warfare Countermeasures Concept of Operation (CONOP) is a synergistic mix of mine countermeasures focused on internal operations that are completed in a vacuum. Although there are forward-deployed Mine Warfare forces, there is no *one* person who controls them operationally. The Commander, Mine Warfare Command (COMINEWARCOM), located in Corpus Christi, Texas, was reorganized to better reflect increased emphasis on littoral warfare and amphibious operations as well as joint war-fighting and training initiatives; however, all forward-deployed ships are administratively controlled by the COMINEWARCOM. There is no centralized operational control of these forces.

Today's emphasis on mine warfare and its support of OMTFS (its concept for projecting naval power ashore in support of a strategic objective) has been difficult, by not having a single operational coordinator for the many facets of this operation. Moreover, with the emphasis

placed on a strong forcible amphibious capability, a CINC's ability to perform this maneuver in a mine environment is severely deficient.

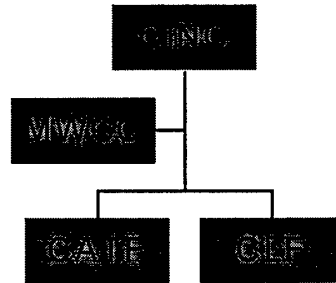
History offers several examples showing that an integrated amphibious mine defense can impede this nation's ability to accomplish its military strategic objective, even in third world countries. In Desert Storm, the Naval Component, Central Command (NAVCENT) established an U.S. MCM Group (USMCMG) to respond to Iraq's mine threat. The group operated under Command Middle East Force (CMEF). The staff assigned to the USMCM Group Commander was both active-duty personnel from other naval commands and reservists. A British MCM force joined with the USMCM Group to conduct most MCM operations. The British MCM group was under the operational control of the UK's Senior Naval Office Middle East, but tactical control was given to USMCM Group Commander. This ad-hoc organization worked but with difficulties. We must plan as we propose to fight. We know that defensive mines are nearly perfect weapons for a nation with inferior sea power. As Desert Storm also demonstrated, the use of mines can restrict or slow the movement of the fleet. The USS Princeton mine incident is a good example. "Two seconds after the mine exploded under the stern, another mine exploded about 300 yards off the starboard bow. The combined effect of these two mines ripped the ship's super structure in two at the amidships quarterdeck."¹⁰

Third world countries have found that, by employing mine warfare, they may deny the sea of a superior naval power. This is precisely what happened to us in Desert Storm by a country with little or no navy.

So, how will having a Mine Warfare Component Commander (MWCC) at the operational level solve this problem? First, this will be a one-stop shopping office for a CINC, concerning

all matters related to Mine Warfare. The intent here is not to remove the responsibility from the Commander, Mine Warfare Command, but to coordinate his efforts; thus, the MWCC job description will be organized as outlined below and will include the following:

MWCC Organization



1. **Plan and coordinate Amphibious Operations with the Commander Amphibious Task Force (CATF) and Command Landing Force (CLF).** In the planning and coordination of Amphibious Operations, the MWCC defines the mine warfare requirements to achieve the mission. He promulgates the movement and assists in the Time-Phased Force Deployment Data (TPFDD) process.
2. **Provide reconnaissance and intelligence estimate to assist the CLF in the joint selection of the Craft Landing Zone (CLZ).** The MWCC will collect and disseminate all information pertinent to transitioning from the deep water to the CLZ as it impacts operation ashore.
3. **Develop and promulgate mine warfare plans as they are applied in two Major Regional Contingencies (MRCs).** It will be the responsibility of the MWCC to

ensure that off-the-shelf Mine Warfare Plans are exercised and evaluated in support of the CINC's mission.

4. **Develop and promulgate follow-on mine warfare clearance responsibilities.** The MWCC will coordinate with the Commander, Mine Warfare Command to ensure that sufficient mine warfare assets are available to support the CATF and CLF.
5. **Coordinate the Special Operation Forces (SOF) efforts in support of mine warfare.** If SOF are to be utilized, the MWCC will coordinate their efforts in support of the CINC's mission. He will deconflict areas of ambiguity between forces to ensure a coordinated handover-turnover procedure occurs.
6. **Coordinate the efforts of all mine warfare assets.** The MWCC, working with the COMINEWARCOM, will coordinate the efforts of all mine assets in support of the CINC's mission.
7. **Coordinate Supporting Fires (when required).** The MWCC will coordinate fire support missions in support of the CINC's mine warfare plans.
8. **Coordinate offensive and defensive mining.** The MWCC will develop and promulgate plans for mine warfare to include offensive and defensive operations, as well as mine countermeasures.

As I have noted earlier, our current doctrine of Operational Maneuver From The Sea (OMFTS) is a concept for projecting naval power ashore in support of a strategic objective. By having a MWCC at the operational level, he can orchestrate the many facets of this concept. This environment requires command and control procedures that meld the offense and defense as well

as operations afloat and ashore, and that effectively integrate these operations as emphasis shifts from one to the other.

Moreover, in an era of reduced force size and limitations on the number of ships that will be built, it cannot be assumed that a joint or combined force will have enough resources to conduct mine countermeasures in support of OMFTS; therefore, it is essential to get the most out of the resources available.

The development of a Mine Warfare Component Commanders Billet at the operational level is paramount. The MWCC will be the pivot point as the force multiplier to both the Commander Amphibious Task Force (CATF) and the Commander Landing Force (CLF). In particular, he would ensure that the maximum benefit is obtained from all assets, and that they are coordinated.

The importance of having a Mine Warfare Component Coordinator at the operational level spans the continuum from the strategic to the operational level. One could suggest that this facet of OMFTS is coordinated today; however, at the CINC's level, focus is primarily concerned with the deployment of forces in support of theater plans. This focus seems to concentrate on only one aspect of this multifaceted operation—whether the operation is a success or is it a failure. Moreover, at the other end of the spectrum, tactical-level planning is centered on expeditionary or combat-related activities. Between these two extremes, there is a definite coordination void.

As outlined in Fleet Marine Force Manual 1-1, "What matters finally is success at the level of strategy, for it is the concern of policy which are the motives for war in the first place and which determines success or failure.... Further, we should never view the tactical realm of war in isolation, for the results of combat become relevant only in the large context of the campaign."¹¹

Deficiencies in Joint Doctrine

*"To solidify the integration of mine warfare, Navy and Marine Corps doctrine must reflect the role of mine warfare across the spectrum. This is but the first step in changing the way we conduct mine warfare operations. However, if we are destined to remain as the leader of the free world, we must change our mind-set and become the advocate of centralized mine warfare control, joint doctrine, and joint training."*¹²

Despite its importance to the overall success of joint operations and general acceptance of contingency as the overarching concept for the coordination of joint maritime efforts at the operational level, there is no clearly defined doctrine in the joint publication hierarchy. The doctrine that does exist is incomplete and, at times, contradictory. A good example is Joint Publication 3-02, joint doctrine for amphibious operations. This publication, considered to many as the "capstone" manual and, thus, the primary source of guiding doctrine on joint maritime matters for combatant commanders, falls short of being adequate overarching mine warfare doctrine. In particular, it fails to present principles underpinning the nature of OMFTS at the joint level and does not address gaps and inconsistencies in the areas of command and control, from the deep water to the high-water mark.

Consequently, each regional CINC is pursuing his own approach to maritime contingency plans. Neither Joint Publication 0-2, Unified Action Armed Forces, nor Publication 5-00.2, Joint Task Force Planning and Procedures, specifies a coordinated effort in support of maritime operations. Joint Publication 5-00.2 hints that the J3 responsibilities include mine warfare, but outlines no specific role.

Traditionally, mine warfare was not institutionalized in battle force doctrine, which put it *out of sight and out of mind*. Moreover, as articulated in the United States Mine Warfare Plan, the Mine

Countermeasures CONOPs entailed a synergistic mix of mine countermeasures—focused planning that includes the following basic activities:

1. Determining mission requirements.
2. Identifying and planning priority minefields.
3. Developing, acquiring, and prepositioning mining assets.
4. Maintaining mine assets.
5. Exercising and training in the mining area.
6. Implementing global mining alliances.¹³

One could surmise from this concept of operation that no one at COMINEWARCOM is tasked with the promulgation of doctrine. Perhaps the most significant impediment is the full and effective use of mine warfare resources if any contingency arises from the traditional view that, aside from its basic function, conducting mine warfare countermeasures is too hard. Therefore, it should be left up to each CINC to plan, as he deems appropriate; however, experience has proven just the opposite.

I recommend that the following actions must be taken:

1. Publish effective guidance for joint and combined mine warfare training.
2. Define the role of the MWCC in joint doctrine.
3. Revise Joint Publication 0-2, Unified Action Armed Forces to elaborate on the importance of mine warfare in support of OMFTS.
4. Revise Joint Publication 5-002, Joint Task Force Planning and Procedures to resolve

the ambiguity of who is in charge of mine warfare from the deep water to the CLZ.

5. Develop joint tactics, techniques, and procedures (JTTP) to amplify concepts in support of mine warfare and how it should be incorporated in both joint and combined training.

Deficiencies in Joint and Combined Training

Fundamental to the nature of joint operation is the need to tailor force packages and command structures to suit the situation at hand. Although the Mine Warfare Component Coordinator staff will initially be built around the mission of the operation, his staff must also be augmented with individuals drawn from other components and agencies of both the CATF and CLF staff.

To a lesser degree, regional CINCs and major component commands have established directives and local SOPs to provide guidance on contingency mine warfare training, but approaches vary widely. To many this may seem appropriate, but actually what is happening is that each CINC is spending his operational budget in pursuit of the same objective. "... Developing a strategy involves relating ends and means. America's fundamental strategy is to secure our objective and defend our interests by deterring aggression against the United States; its allies, and its interests. This requires that potential adversaries perceive that the cost to them of initiating aggression are likely to outweigh any benefits they might accrue."¹⁴

During an exercise that I participated in the Far East, the CINC's concept of operation was different from that of the CINC in the United States; however, they were given the same problem, but pursued them differently. This disparity resulted because there was no prior mine

warfare training or lessons learned that they could use as a baseline. From the outside looking in, everything appeared to be ad hoc. We cannot continue to allow this to happen.

Additionally, in 1991, when there was concern about mine warfare weaknesses revealed during Operations Desert Shield and Storm, the Senate Committee on Armed Services requested that the National Academy of Sciences study the Navy's mine warfare activities. Academy officials believed that mine warfare forces needed to be located on both coasts with the fleets they were protecting. The Academy's draft report stated: "Training with the fleets—a pivot factor arising from Operation Desert Shield and Storm—is one of the numerous advantages of locating the forces at a site, such as Ingleside, that is remote from fleet concentrations."¹⁵

One only needs to review the recommendation of the Center for Naval Analysis (CNA). The Navy's "own" Center for Naval Analysis study found that it was not cost effective to move Mine Warfare Operations to Ingleside, Texas. The study stated: "... We recommend that the Secretary of the Navy delay plans to consolidate the Navy's mine warfare forces at Ingleside, Texas. Operation Desert Storm revealed deficiencies in the Navy's mine warfare forces. It showed a need for centralized command and the joint training of ships, helicopters, and explosive ordnance disposal detachments. It also illustrated a lack of coordination between the integrated mine warfare forces and the combatant ships they were protecting."¹⁶

It is apparent that these differences are not only owing to the unique characteristics of a given area of responsibility (AOR), but how, in the absence of adequate training, alternative views on the concept of contingency of mine warfare have evolved over time. The lack of some

appropriate level of uniformity in the application of these principles serves to confuse staff augments and may result in conflict between the way a major component command and a regional CINC plan to conduct their operations.

This lack of relevant training and the limited number of experienced personnel in joint contingency operations, combined with the usual staff turbulence, cause a situation where the same lessons are relearned over and over. Opportunities to train service personnel are few. Mine warfare personnel are not often permitted a strong presence in joint exercises, and mine warfare problems are often assumed away by operational commanders.

In its role as joint trainer for assigned CONUS-based forces and joint task force staffs, United States Atlantic Command (USACOM) must develop and implement a Program Of Instruction (POI) for mine warfare training. This requirement is as important as a step forward in providing a platform for joint contingency mine warfare training. Moreover, having a Mine Warfare Coordinator at the operational level can shape this initiative. His input would reflect the required planning that would bridge the gap from the operational to the tactical level—thus developing a clear and attainable guidance. I recommend the following action be taken:

1. Introduce Mine Warfare in facet of amphibious operation training, to include ARG/MEU work-up training.
2. Include mine warfare in all of our global wargames.
3. Develop joint and combined tactics for mine warfare.
4. Teach mine warfare planning at both Navy and Marine Corps Schools.
5. Exercise mine warfare tactics, techniques, and procedures on an annual basis at the CINC level of operation.

Conclusion

To be successful, Naval Forces must be able to deal with the multitude of threats, including the potential mine threats in each phase of an operation. Mines can affect every type of warfare from Military Operations Other Than War to full-scale war. I have shown how the lack of a single point of contact, disjointed doctrine, and the lack of standardized training have combined to deprive the CINC of an effective capability.

Moreover, the practice of operational art is difficult at best; command and control should never be stove-piped. The many facets of this complex operation called Mine Warfare require undivided attention. I will surmise that it will not get it until there is a central focus. That focus must be at the operational level. Furthermore, that focus must incorporate joint doctrine that doesn't limit the CINC's courses of action, and one that affords him the opportunity to conduct joint and combined training.

Joint and Combined Operations require us to think and plan as a team, rather than autonomously. In today's environment no service fights alone, and such, the command structure, doctrine, and training must be understood by all. We must understand that if done properly, mine warfare is an enabler that supports all facets of Operation Maneuver From The Sea. Therefore, emphasis must be placed on this enabler.

Furthermore, the Naval Service cannot continue to ignore the emerging role of mine warfare in regional contingency operations, and the requirement for an MCM force structure at the operational level. The art of mine warfare requires both imagination and skill to achieve the optimal effectiveness of a particular minefield, vis-a-vis the desired strategic and operational aims.

NOTES

1. Expeditionary Warfare Office of the Chief of Naval Operations, United States Naval Mine Warfare Plan, 3rd ed., Fiscal Year 1996-1997 Program (Washington, D.C.: n.p., April 1996), iv.
2. Department of Defense, Conduct of the Persian Gulf War, (n.p.: n.p., n.d.), 202.
3. David Silverberg, "World Navies Gear Up to Defeat Old, New Mines," Defense News, 16-22 November 1992, 10.
4. The White House, "Advancing Our Interest Through Engagement and Enlargement," A National Security of Engagement and Enlargement (Washington, D.C.: U.S. Government Printing Office, 1996), 2.
5. N.B. Atkins, CDR, USN, and F.S. Steinke, CAPT, USN, Office of the Chief of Naval Operations, Mine Warfare in Korea (Washington, D.C.: National Research Council Committee on Undersea Warfare, 9-10 May 1951), 1.
6. John H. Dalton; J.M. Boorda, ADM; and C.E. Mundy Jr., USMC Commandant of Marine Corps, Department of the Navy, "Forward ... From the Sea," (Washington, D.C.: n.p., September 1992), 1.
7. Arnold S. Lott, LCDR, USN, Most Dangerous Sea, (n.p.: n.p., 1959), 3.
8. Paul A. Lluy, "Mine Warfare Overview Technical Report," (n.p.: Defense Technical Information Center, 1995). 10.
9. J.M. Boorda, ADM, CNO White Paper: CSS Mine Countermeasures, (n.p.: n.p., n.d.), 2.
10. Department of Defense, 205.
11. Department of the Navy, HQ, US Marine Corps, FMFM 1-1, Campaigning (Washington, D.C.: n.p., 25 January 1990), 15.
12. J.M. Boorda, 2.
13. Expeditionary Warfare Office of the Chief of Naval Operations, 12.
14. Frank C. Carlucci, Annual Report to Congress Fiscal Year 1990 (Washington, D.C.: U.S. Government Printing Office, 1989), 2.

15. Government Accounting Office, "Mine Warfare Consolidation at Ingleside Has Not Been Justified," GAO Report to Congress (Washington, D.C.: GAO, February 1993), 5.

16. Ibid., 1.

BIBLIOGRAPHY

1. Atkins, N.B., CDR, USN and F.S. Steinke, CAPT, USN. Office of the Chief of Naval Operations. Mine Warfare in Korea. Washington, D.C.: National Research Council Committee on Undersea Warfare, 9-10 May 1951.
2. Boorda, J.M., ADM. CNO White Paper: CSS Mine Countermeasures. (n.p.: n.p., n.d).
3. Carlucci, Frank C. Annual Report to Congress Fiscal Year 1990. Washington, D.C.: U.S. Government Printing Office, 1989.
4. Dalton, John. H., J.M. Boorda, ADM and C.E. Mundy Jr., USMC Commandant of Marine Corps, Department of Navy. "Forward ... From the Sea." Washington, D.C.: n.p., September 1992.
5. Department of Defense. Conduct of the Persian Gulf War. n.p.: n.p., n.d., 202.
6. Department of Navy, HQ, US Marine Corps. FMFM 1-1, Campaigning. Washington, D.C.: n.p., 25 January 1990.
7. Expeditionary Warfare Office of the Chief of Naval Operations. United States Naval Mine Warfare Plan. 3rd ed. Fiscal Year 1990. Washington, D.C.: n.p., April 1996.
8. Government Accounting Office. "Mine Warfare Consolidation at Ingleside Has Not Been Justified." GAO Report to Congress. Washington, D.C.: U.S. Government Printing Office, February 1993.
9. Lott, Arnold S., LCDR, USN. Most Dangerous Sea. n.p.: n.p., 1959.
10. Luly, Paul A. "Mine Warfare Overview Technical Report." n.p.: Defense Technical Information Center, 1995
11. Silverberg, David. "World Navies Gear Up to Defeat Old, New Mines." Defense News, 16-22 November 1992.
12. The White House. "Advancing Our Interest Through Engagement and Enlargement." A National Security of Engagement and Enlargement. Washington, D.C.: U.S. Government Printing Office, 1996.